

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Ulrich Emmerling et al.  
Serial No.: 10/603,209  
Date Filed: June 25, 2003  
Group Art Unit: 2168  
Examiner: Dwivedi, Mahesh H.  
Title: **METHOD FOR AUTHENTICATING A  
FIRST OBJECT TO AT LEAST ONE  
FURTHER OBJECT, ESPECIALLY THE  
VEHICLE TO AT LEAST ONE KEY**

**MAIL STOP – APPEAL BRIEF - PATENTS**

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**REPLY BRIEF**

Appellants have appealed to this Board from a decision dated August 28, 2006 of the Examiner finally rejecting claims 1-17 of the subject application. Appellants filed a Notice of Appeal and Pre-Appeal Brief Request on October 19, 2006, and then an Appeal Brief February 20, 2007. The Examiner responded in an Examiner's Answer mailed June 29, 2007 which does not contain any new grounds of rejections. Applicants respectfully submit this reply brief according to §41.41 for consideration of the board.

**APPELLANT'S REPLY BRIEF (37 C.F.R. § 41.41)**

This brief is submitted in support of appellants' notice of appeal from the decision dated August 28, 2006 of the Examiner finally rejecting claims 1-17 of the subject application. This reply brief contains no new or non-admitted amendments, or any new or non-admitted affidavits or other evidence.

**I. REAL PARTY IN INTEREST**

The real party in interest is:

Siemens AG  
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by virtue of an assignment by the inventors as duly recorded in the Assignment Branch of the U.S. Patent and Trademark Office.

**II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences.

**III. STATUS OF CLAIMS**

The application as originally filed contained a total of 17 claims, wherein claims 1 and 11 were independent. The status of the claims are as follows:

Claims Pending:	1-17
Claims Rejected:	1-17
Claims Allowed:	none
Claims Cancelled:	none
Claims Amended:	1-4 and 11-12
Claims Withdrawn:	none
Claims Objected:	none

Appellants appeal the rejection of claims 1-17 of the present application. These claims are reproduced in attached Appendix.

#### **IV. STATUS OF AMENDMENTS**

Applicants amended Claims 1-4, 11-12 in a Response to Office Action filed April 25, 2006. No further amendments were made during prosecution.

#### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

Independent claim 1 is directed to a method for authenticating a first object to at least one further object. (*See, e.g.*, specification, page 1, lines 8-11; and page 4, lines 14-16). The method comprises the steps of:

a) transmitting an item of information (ST) unidirectionally between the first object and the at least one further object, (*See, e.g.*, specification, page 4, lines 17-18; page 5, lines 13-9; page 7, lines 9-21; and page 8, lines 5-8)

b) calculating a computation result (calculated RE) in the relevant receiving object from parts of the transmitted information (ST), (*See, e.g.*, specification, page 4, lines 19-20; page 5, lines 20-24; and page 8, line 16 to page 9, line 2)

c) comparing the calculated computation result (calculated RE) with a computation result (transferred RE) transferred with the information (ST) in the relevant receiving object, (*See, e.g.*, specification, page 4, lines 21-22; page 5, lines 20-24; and page 8, line 24 to page 9, line 2) and

d) authenticating the first object to the at least one further object only if there is a match between the calculated computation result (calculated RE) and transferred computation result (transferred RE), and declaring the computation result (calculated RE) as invalid for further transmissions. (*See, e.g.*, specification, page 4, lines 23-24; page 6, lines 16-19; and page 9, lines 3-19).

Independent claim 11 is directed to a method for authenticating a vehicle to a key. (*See, e.g.*, specification, page 1, lines 8-11; and page 4, lines 14-16). The method comprises the steps of:

a) transmitting an item of information (ST) unidirectionally between the vehicle and the key, (*See, e.g.*, specification, page 4, lines 17-18; page 5, lines 13-9; page 7, lines 9-21; and page 8, lines 5-8)

b) calculating a computation result (calculated RE) in the key from parts of the transmitted information (ST), (*See, e.g.*, specification, page 4, lines 19-20; page 5, lines 20-24; and page 8, line 16 to page 9, line 2)

c) comparing the calculated computation result (calculated RE) with a computation result (transferred RE) transferred with the information (ST), wherein the comparing is in the key, (*See, e.g.*, specification, page 4, lines 21-22; page 5, lines 20-24; and page 8, line 24 to page 9, line 2) and

d) authenticating the vehicle if there is a match between the calculated computation result (calculated RE) and the transferred computation result (transferred RE), and declaring the computation result (calculated RE) as invalid for further transmissions. (*See, e.g.*, specification, page 4, lines 23-24; page 6, lines 16-19; and page 9, lines 3-19).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

The Examiner finally rejected claims 1-2, and 11 under 35 USC 102(a) as being anticipated by US 4,509,093 (“*Stellberger*”). However, Applicant believes that independent claims 1 and 11 include limitations neither shown nor suggested by *Stellberger*.

Furthermore, the Examiner finally rejected claims 3-10, and 12-17 as being unpatentable over *Stellberger* in view of U.S. Patent 6,381,699 (“*Kocher*”). However, Applicant believes that independent claims 1 and 11 include limitations neither shown nor suggested by *Stellberger* and, therefore, Claims 3-10 and 12-17 which include all the limitations of independent Claims 1 and 11, respectively, cannot be rendered obvious.

## VII. ARGUMENT

### Claims 1 and 11

The Examiner finally rejected claims 1 and 11 under 35 USC 102(b) as being anticipated by *Stellberger*. The Examiner particularly stated that *Stellberger* teaches:

Step a) of independent method claim 1 and 11 in column 6, lines 60-67 to column 7, lines 1-8 (hereinafter “citation I”);

Step b) in column 7, lines 9-23 (hereinafter “citation II”);

Step c) in column 4, lines 22-27 (hereinafter “citation III”) and column 9, lines 32-36 (hereinafter “citation IV”); and

Step d) in column 5, lines 29-31 (hereinafter “citation V”). Applicants respectfully disagree.

Applicant respectfully disagrees. *Stellberger* generally discloses two different methods of authentication. The first method is graphically represented in Fig. 2 of *Stellberger* and the second method in Fig. 3 of *Stellberger*. These methods are each distinct in their functionality and, thus, the respective steps of these method cannot simply be mixed or interchanged without compromising the functionality of the methods.

Fig. 2 of *Stellberger* represents a method in which upon exitation (step B), a first item of information X is sent from the lock unit 20 to the key unit 10 (step D). Key unit 10 then calculates result Y,  $Y^-$  (step G) and transmits this result to lock unit 20 which then performs a comparison (step K). Thus, this method clearly differs from the claimed method because the computed result is transmitted before comparison.

The second method shown in Fig. 3, differs from the first method in providing parallel computation and comparison, i.e., both units perform a computation and comparison with items of information transferred from the respective other unit. However, to this end, the second method requires a bidirectional transfer of information.

In the rejection, the Examiner impermissibly identifies different steps of the two *Stellberger* methods and mixes these steps to create a new method which is not disclosed or suggested in *Stellberger*. For example, citations I, II, and V relate to the first method shown in Fig. 2. However, citation III and IV clearly refer to the second method as shown in Fig. 3.

The Examiner impermissible randomly singles out a step of the second method and tries to combine it with the first method. However, such a analysis/conclusion is neither supported by 35 USC §102 or §103. As discussed above, first and second methods perform different steps that cannot be interchanged.

For example, if according to *Stellberger's* first method shown in Fig. 2, step D is regarded as step a) of Claims 1 and 11, then lock unit 20 represents the first object and key unit 10 represents the at least one further object. However, the comparison which is performed in step K of *Stellberger* is also performed in the lock unit 20. Thus, *Stellberger's* first method cannot anticipate Claims 1 and 11.

If according to *Stellberger's* second method shown in Fig. 3, step D<sub>n</sub> is regarded to be equivalent to step a) of Claims 1 and 11, then again lock unit 20 represents the first object and key unit 10 represents the at least one further object. In step D<sub>n</sub> lock unit 20 transmits information Z'₁...Z'ₙ to key unit 10. Key unit 10 then computes a result Y₁, Y⁻₁ in step G₁ and H₁. However, the method step c) of Claims 1 and 11 requires that the calculated result is compared to a computation result which has been transferred in the item of information in step a). However, *Stellberger* teaches to perform another separate transmission step J₁ to transfer the comparison result Y⁻₁ from lock unit 20 to key unit 10. Moreover, to be able to calculate this result Y⁻₁ in lock unit 20, the method of *Stellberger* needs to perform a bidirectional transfer in step D<sub>n</sub> in which information is transferred from key unit 10 to lock unit 20 and vice versa. Thus, the second method does neither disclose step a) nor step c) of independent Claim 1 and 11.

In summary, *Stellberger* does not disclose or suggest the specific steps as defined in the independent Claims 1 and 11.

#### Examiner's Answer

##### i) 10.A.1.Arguments(2) and 10.A.1.Arguments(3)

In response to the above presented arguments regarding Claims 1 and 11, the Examiner argued in paragraphs 10.A.1.Arguments(2) and 10.A.1.Arguments(3) that according to the MPEP for anticipation under 35 U.S.C. §102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. The Examiner further states

that this allegedly the case here. In further support to his theory, the Examiner points to Column 12 of *Stellberger* which states "It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above." *Stellberger*, col. 12, lines 32-35.

Applicant respectfully disagrees. 35 U.S.C. §102(b) states that a person shall be entitled to a patent unless:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

In the present case, the invention is a method for authenticating a first object to at least one further object. As stated by the MPEP and correctly recited by the Examiner, the reference must teach every aspect of the claimed invention either explicitly or impliedly.

*a). Explicit anticipation*

An explicit anticipation requires that each and every element of a claim must be disclosed in the reference. However, the reference must disclose a single embodiment with all the elements and their interconnection. Correspondingly, the reference must disclose all method steps in the same sequence and combination as claimed. Thus, the fact that a reference teaches certain elements in one embodiment and other elements in another embodiment does not anticipate a claimed structure unless these elements are clearly exchangeable. However, this is not the case with *Stellberger*. As stated above, *Stellberger* discloses completely different methods. A person skilled in the art would not simply exchange one method step of a first method with any method step of another method.

The Examiner, failed to explain why a person skilled in the art would single out the method steps of the second method as found in citations III and IV of *Stellberger* to replace certain steps in the first methods of *Stellberger*. The Examiner merely stated that citations III and IV disclose step c) of Claim 1. Under the logic of the Examiner, any apparatus claim

having a plurality of structural elements could then be anticipated by a simple dictionary because a dictionary discloses all these elements.

A method in particular such as the claimed method generally consists of a plurality of steps that are interrelated. In other words, each step depends on the outcome of the previous step. Different methods disclose different interrelationships and, thus, one step of one method is not necessarily interchangeable with a method step of another method.

With respect to Claim 1 and 11, *Stellberger* clearly does not teach the claim method.

*b). Implied anticipation*

Even though, if a single reference does not disclose every element of a method in a single embodiment, the reference still could anticipate the claimed method if the reference teaches to substitute a method step with a different method step. To this end, the reference could refer to different steps, such as for example one which is disclosed in different embodiment. However, this is not the case with *Stellberger*.

As stated above, *Stellberger* discloses two very different methods, wherein the second method as opposed to the first method uses parallel computation and comparison and bidirectional transfers. A person skilled in the art would not exchange any step of one of these methods with steps of the other method because this would render the respectively altered method inoperable. The Examiner failed to explain why a person would exchange the identified steps. The Examiner simply refers to column 12 which states "It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above." *Stellberger*, col. 12, lines 32-35. It is not clear to what this statement refers. However, such a statement does not enable a person skilled in the art to perform the alteration of the disclosed methods as suggested by the Examiner. Thus, *Stellberger* does not impliedly anticipate the present Claims 1 and 11.

#### 10.A.1.Arguments(4)

Appellant argued that the first method of *Stellberger* discloses to perform the comparison in the lock unit 20 contrary to Claim 1 and 11. The Examiner stated that *Stellberger* states “The comparison phase between the output signals produced in each working cycle is preferably made alternately in the key part and then in the lock part.” *Stellberger* column 4, lines 24-27. From this citation, the Examiner concludes that *Stellberger* broadly teaches the claimed step of “comparing the calculated computation result with a computation result transferred with the information in the relevant receiving object.” Applicant respectfully disagrees.

As stated above *Stellberger* discloses two distinct methods. The citation that “The comparison phase between the output signals produced in each working cycle is preferably made alternately in the key part and then in the lock part” refers to the second method. As stated above, the steps of the first and second method are not randomly interchangeable. Moreover, the above citation of *Stellberger* does not state that a user can randomly choose to perform the comparison in the key part or in the lock part. On the contrary, *Stellberger* merely states that in the second method, in one cycle the comparison is made in the key part and in a following cycle in the lock part as shown in Fig. 3 of *Stellberger*.

#### 10.A.1.Arguments(5)

The Examiner stated that the citation “The comparison phase between the output signals produced in each working cycle is preferably made alternately in the key part and then in the lock part” was used to show that the comparison can be either performed in the key part or in the lock part. Applicant respectfully disagrees.

As stated above, the above citation of *Stellberger* does not state that a user can randomly choose to perform the comparison in the key part or in the lock part. On the contrary, *Stellberger* merely states that in the second method, in one cycle the comparison is made in the key part and in a following cycle in the lock part as shown in Fig. 3 of *Stellberger*.

In either cycle, according to *Stellberger*, the comparison is always performed in the transmitting object whereas according to claims 1 and 11 the comparison is performed in the receiving object. For example, in the method of Fig. 2, the lock transmits the interrogation X which is used for computation in the key. however, the comparison is performed in the lock in step J. In the embodiment of Fig. 3, which presents parallel computation and comparison, whenever the key transmits an interrogation, for example in step Z<sub>1</sub>, the key also performs the comparison, for example, in step K<sub>1</sub>. At no time, *Stellberger* teaches to perform the comparison in the receiving unit as claimed in independent Claims 1 and 11.

Dependent Claims 2-10 and 12-17

Claim 2 stands rejected as being anticipated by *Stellberger* under 35 U.S.C. §102. Claims 3-10 and 12-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Stellberger* in view of *Kocher*. Applicants respectfully submit that the dependent Claims are allowable at least to the extent of the independent Claim to which they refer, respectively. Because, Claims 1 and 11 are not anticipated by *Stellberger*, the dependent Claims 2-10 and 12-17 cannot be anticipated or rendered obvious by *Stellberger*. Thus, Applicants respectfully request reconsideration and allowance of the dependent Claims.

**SUMMARY**

Appellants respectfully request the Board to reverse the final rejections of the Examiner. Appellants believe no fees are due in the filing of this Reply Brief. However, the Commissioner is hereby authorized to charge any fee and credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

Respectfully submitted,

BAKER BOTTS L.L.P. (31625)

Date: August 23, 2007

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### VIII. CLAIMS APPENDIX

Claims:

1. (Previously Presented) Method for authenticating a first object to at least one further object comprising the steps of:

a) transmitting an item of information unidirectionally between the first object and the at least one further object,

b) calculating a computation result in the relevant receiving object from parts of the transmitted information,

c) comparing the calculated computation result with a computation result transferred with the information in the relevant receiving object, and

d) authenticating the first object to the at least one further object only if there is a match between the calculated computation result and transferred computation result, and declaring the computation result as invalid for further transmissions.

2. (Previously Presented) Method in accordance with Claim 1, wherein the first object comprises a vehicle and the at least one further object comprises a key, and wherein the information is transmitted from the vehicle and received by the key.

3. (Previously Presented) Method in accordance with Claim 1, wherein the information comprises: a random number and an incremental or decrementable item of data, wherein the incremental or decrementable item of data is stored in the at least one further object if the calculated computation result matches the transferred computation result, and wherein after each transmission of the information, regardless of a successful receipt, the item of data is incremented or decremented before new information is transmitted.

4. (Previously Presented) Method in accordance with Claim 2, wherein the information comprises: a random number and an incremental or decrementable item of data, wherein the incremental or decrementable item of data is stored in the key if the calculated computation result matches the transferred computation result, and wherein after each

transmission of the information, regardless of a successful receipt, the item of data is incremented or decremented before new information is transmitted.

5. (Original) Method in accordance with Claim 1, wherein a counter state or item of time data is transferred as the item of data that can be incremented.

6. (Original) Method in accordance with Claim 2, wherein a counter state or item of time data is transferred as the item of data that can be incremented.

7. (Original) Method in accordance with Claim 5, wherein the result is only calculated when the transferred item of data is greater than the stored item of data.

8. (Original) Method in accordance with Claim 5, wherein when the transferred result and the calculated result match, the incrementable item of data is increased so that the transferred result becomes invalid.

9. (Original) Method in accordance with Claim 7, wherein when the transferred result and the calculated result match, the incrementable item of data is increased so that the transferred result becomes invalid.

10. (Original) Method in accordance with Claim 1, wherein the result is computed in at least one further object using a cryptological computation algorithm known there and a code word.

11. (Previously Presented) Method for authenticating a vehicle to at a key comprising the steps of:

a) transmitting an item of information unidirectionally between the vehicle and the key,

b) calculating a computation result in the key from parts of the transmitted information,

- c) comparing the calculated computation result with a computation result transferred with the information, wherein the comparing is in the key, and
- d) authenticating the vehicle if there is a match between the calculated computation result and the transferred computation result, and declaring the computation result as invalid for further transmissions.

12. (Previously Presented) Method in accordance with Claim 11, wherein the information comprises: a random number and an incremental or decrementable item of data, wherein the incremental or decrementable item of data is stored in the key if the calculated computation result matches the transferred computation result, and wherein after each transmission of the information, regardless of a successful receipt, the item of data is incremented or decremented before new information is transmitted.

13. (Original) Method in accordance with Claim 11, wherein a counter state or item of time data is transferred as the item of data that can be incremented.

14. (Original) Method in accordance with Claim 13, wherein the result is only calculated when the transferred item of data is greater than the stored item of data.

15. (Original) Method in accordance with Claim 13, wherein when the transferred result and the calculated result match, the incrementable item of data is increased so that the transferred result becomes invalid.

16. (Original) Method in accordance with Claim 14, wherein when the transferred result and the calculated result match, the incrementable item of data is increased so that the transferred result becomes invalid.

17. (Original) Method in accordance with Claim 11, wherein the result is computed in the key using a cryptological computation algorithm known there and a code word.

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**IX. EVIDENCE APPENDIX**

**NONE**

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**X. RELATED PROCEEDINGS APPENDIX**

**NONE**